REMARKS

Claims 1 and 3-28 are pending in this application, of which claims 1 and 3-7 have been allowed and claim 28 is newly-added.

Claims 8, 9, 23 and 27 stand rejected under 35 U.S.C. § 103(a) as unpatentable over **Dagenais et al.** (previously applied).

Applicant respectfully traverses this rejection.

As noted in Applicant's response filed August 9, 2006, **Dagenais et al.** discloses an optical amplification device including a depolarizer for reducing the polarization sensitivity requirements on a semiconductor optical amplifier ("SOA") by changing the input to the SOA from having an arbitrary (unknown) polarization state to a known (depolarized) state. The depolarizer receives an input optical signal and outputs a depolarized optical signal, and an SOA receives the depolarized optical signal and outputs an amplified optical signal.

FIG. 6 of **Dagenais et al.** shows two separate SOAs, in contrast to the present invention, in which a single SOA with two separate inputs and outputs is used.

In FIG. 6 of **Dagenais et al.**, each SOA amplifier amplifies a TE wave and, after amplification, the output of one of the SOAs is converted to a TM wave to be combined with the other amplified TE wave in polarization beam combiner 67. Column 5, lines 65-67 disclose the reason for using this configuration:

> This configuration uses the two polarization dependent SOAs in an offsetting manner to create a polarization insensitive amplification device 60.

Thus, if would not be obvious to one of ordinary skill in the art to remove polarization rotator 66 to couple two separate TE waves in a multiplexer prior to amplification. In FIG. 6 of **Dagenais et al.**, polarization beam combiner 67 combines different types of light polarizations after amplification by SOA 62 and SOA 63, while the single SOA recited in claim 8 of the instant application performs light amplification without sending its output to any such "polarization beam combiner."

Dagenais et al. also fails to disclose the phase controller recited in claim 9 of the instant application, which controls "a phase of the TE wave outputted from said demultiplexer so that the TE wave intensifies with a TE wave outputted from said converter in said multiplexer."

Dagenais et al. further fails to disclose a gain equalizer for controlling a gain of a light outputted from said semiconductor optical amplifier within a range within a predetermined wavelength band.

Thus, the 35 U.S.C. § 103(a) rejection should be withdrawn.

Claims 22 and 26 stand rejected under 35 U.S.C. § 103(a) as unpatentable over **Dagenais et al.** in view of **Uchizaki et al.** (previously applied).

Applicant respectfully traverses this rejection.

As noted in Applicant's previous response, **Uchizaki et al.** discloses a semiconductor laser array including a plurality of index-guided semiconductor lasers different in oscillation wavelength collectively controlling their double transverse modes and collectively processing them to form their current-blocking structures and buried layers.

The Examiner has indicated that claim 1 is allowable. Thus, claims 22 and 26 depending therefrom are also allowable.

Thus, the 35 U.S.C. § 103(a) rejection should be withdrawn.

Claims 12 and 17 stand rejected under 35 U.S.C. § 103(a) as unpatentable over **Dagenais et al.** in view of **Uchizaki et al.** and further in view of **Kinoshita et al.** (also previously applied).

Applicant respectfully traverses this rejection.

Kinoshita et al. has been cited for teaching an ALC support structure but, like the other cited references, fails to teach, mention or suggest the feature as recited in claim 8, from which these claims depend.

Thus, the 35 U.S.C. § 103(a) rejection should be withdrawn.

Claims 10-11, 13-16, 18-21 and 24-25 stand rejected under 35 U.S.C. § 103(a) as unpatentable over **Dagenais et al.** in view of **Uchizaki et al.** and **Kim et al.** (previously applied).

Applicant respectfully traverses this rejection.

First, claims 18 and 20 depend from claim 7, which has been allowed, so claims 18 and 20 are also allowable. Claims 13 and 15 depend from claim 6, which has been allowed, so claims 13 and 15 are also allowable.

Kim et al. discloses a polarization insensitive semiconductor optical amplifier (SOA) in an optical amplifying element having a substrate and a multi-layer structure, crystal growth layer including an active layer formed on the substrate. The active layer is divided into first and second areas having different polarization modes. An electrode means independently applies

currents to the first and second areas. Therefore, the polarization insensitive semiconductor optical amplifier is capable of separately controlling TE and TM polarization gains so as to approximately equalize the TE polarization gain to the TM polarization gain.

Although FIG. 2 of **Kim et al.** shows a TM area and a TE area, there is only one light input and only one light output path in single active layer 30.

This is in contrast to the present invention as shown in FIG. 1, in which there are two separate light inputs and two separate light outputs. This is because it has two of the structures shown in FIG. 2, as disclosed from page 7, line 27 to page 8, line 9 of the specification of the instant application. FIG. 1 shows two light inputs and two light outputs for the quantum dot optical amplifier 1 of the instant application.

The Examiner has urged that **Kim et al.** teaches the optical repeater wherein said demultiplexer and said multiplexer are monolithically integrated into a PLC with said semiconductor optical amplifier.

As noted above, **Kim et al.** fails to disclose the converter recited in claim 8, from which claims 10-11, 14, 16, 19 and 21 depend.

As a final note, it appears there was some confusion on the Examiner's part regarding the claims identified in each rejection and the arguments the Examiner made directed to those claims. See, for example, the incomplete sentence on page 7 starting with "Regarding claim 6...."

Thus, the 35 U.S.C. § 103(a) rejection should be withdrawn.

In view of the aforementioned amendments and accompanying remarks, claims 1 and 3-28, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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Enclosures: Petition for Extension of Time
Check in the amount of $450.00

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